

Claims

1-13 Canceled.

14. (Previously presented) A paper web prepared by a process comprising the steps of:

providing a pulp slurry, said slurry containing at least about 30% by dry pulp weight of a low-grade pulp, said low-grade pulp being a pulp selected from the group consisting of a groundwood pulp, a recycled pulp, and mixtures thereof;

adding a pre-flocculated filler to said slurry;

forming a paper web from said slurry; and

winding said web on a reel;

said pre-flocculated filler being added to said slurry in an amount effective to provide a filler content in said web, at least a portion of said filler in said web comprising said pre-flocculated filler, wherein said pre-flocculated filler is selected from the group consisting of clays, lithopone, sulfate fillers, titanium pigments, talc, calcium carbonate, and gypsum, wherein said pre-flocculated filler has been prepared by steps of:

continuously introducing an aqueous slurry of a non-flocculated paper filler material and an aqueous slurry of from 0.5 to 60% by weight of the filler material of a flocculating agent into a shear imparting device and imparting to the mixture within said device a shearing force sufficient to provided flocculated filler particles of a size adapted for use in paper making without any additional treatment and continuously removing said flocculated filler particles from the shear imparting device, said particle size being in the range from 38 to 75 micron.

15. (Previously presented) The paper web according to claim 14, the process further comprising the steps of:

drying said web; and

cutting said web into sheets.

16. (Previously presented) The paper web according to claim 15, the process further comprising the step of:

printing on said web prior to cutting said web into sheets.

17. (Previously presented) A newspaper prepared by a process comprising the steps of:

providing a newsprint pulp slurry;

adding a pre-flocculated filler to said slurry;

wherein said pre-flocculated filler is selected from the group consisting of clays, lithopone, sulfate fillers, titanium pigments, talc, calcium carbonate, and gypsum, wherein said pre-flocculated filler has been prepared by steps of:

continuously introducing an aqueous slurry of a non-flocculated paper filler material and an aqueous slurry from 0.5 to 60% by weight of the filler material of a flocculating agent into a shear imparting device and imparting to the mixture within said device a shearing force sufficient to provide flocculated filler particles of a size adapted for use in paper making without any additional treatment and continuously removing said flocculated filler particles from the shear imparting device, said particle size being in the range from 38 to 75 micron,

forming a paper web from said slurry, said pre-flocculated filler being added to said slurry in an amount effective to provide a filler content in said web, at least a portion of said filler in said web comprising said pre-flocculated filler;

collecting said web on a reel, and in either order:

printing on said web; and

cutting said web into sheets.

18. (Previously presented) The newspaper according to claim 17, wherein said web is cut into sheets after said step of printing on said web.

19-31 Canceled.

32. (Previously presented) A paper web prepared by a process comprising the steps of:

providing a pulp slurry, said slurry containing at least about 30% dry pulp weight of a low-grade pulp, said low-grade pulp being a pulp selected from the group consisting of a groundwood pulp, a recycled pulp, and mixtures thereof;

adding a pre-flocculated filler to said slurry to thereby form a slurry/filler mixture; introducing said slurry/filler mixture to the headbox of a paper-making machine; depositing said slurry on a web-former; and withdrawing a paper web from said headbox;

said pre-flocculated filler being added to said slurry in an amount effective to provide a filler content in said web, at least a portion of said filler in said web comprising said pre-flocculated filler, wherein said pre-flocculated filler is selected from the group consisting of clays, lithopone, sulfate fillers, titanium pigments, talc, calcium carbonate, and gypsum, wherein said pre-flocculated filler has been prepared by steps of

continuously introducing an aqueous slurry of a non-flocculated paper filler material and an aqueous slurry of from 0.5 to 60% by weight of the filler material of a flocculating agent into a shear imparting device and imparting to the mixture within said device a shearing force sufficient to provide flocculated filler particles of a size adapted for use in paper making without any additional treatment and continuously removing said flocculated filler particles from the shear imparting device, said particle size being in the range from 38 to 75 micron.

33. (Previously presented) The paper web according to claim 32, the process further comprising the steps of:

drying said web; and
cutting said web into sheets.

34. (Previously presented) The paper web according to claim 33, the process further comprising the step of:

printing on said web prior to cutting said web into sheets.

35-40 Canceled.

41. (Previously presented) A paper web prepared by a process comprising the steps of:

providing a treated slurry of coated broke, said treated slurry having been prepared by a process comprising the steps of:

providing a repulped slurry of coated broke, said slurry containing fibers and particles of coating residue;

adding a chemical flocculant to said slurry in an amount effective to form floccs of said fibers and particles of coating residue; and

applying a shearing force to said slurry, said sheering force being sufficient to limit the size of said floccs to a size that is effective to enhance the retention of said floccs in a paper web; and withdrawing a paper web from said treated slurry.

42-47 Canceled.

48. (Previously presented) A paper web prepared by a process comprising the steps of:

providing a treated slurry of coated broke, said treated slurry having been prepared by a process comprising the steps of:

providing a repulped slurry of coated broke, said slurry containing fibers and particles of coating residue;

adding a chemical flocculant to said slurry in an amount effective to form floccs of said fibers and particles of coating residue; and

applying a shearing force to said slurry, said sheering force being sufficient to limit the size of said floccs to a size that is effective to enhance the retention of said floccs in a paper web;

adding said treated slurry to a fibrous pulp slurry to form a combined slurry; and withdrawing a paper web from said combined slurry.

49-54 Canceled.

55. (Previously presented) A paper web prepared by a process comprising the steps of:

providing a treated slurry of coated broke, said treated slurry having been prepared by a process comprising the steps of:

continuously introducing a repulped slurry of coated broke and a chemical flocculant into a shear imparting device, said slurry containing fibers and particles of coating residue and said chemical flocculant being added in an amount effective to form floccs of said fibers and said particles of coating residue, and

continuously withdrawing from said shear imparting device a slurry continuing said floccs, the shearing force imparted by said device being sufficient to limit the size of said floccs to a size that is effective to enhance the retention of said floccs in a paper web; and

withdrawing a paper web from said slurry.

56-61 Canceled.

62. (Previously presented) A paper web prepared by a process comprising the steps of:

providing a treated slurry, said treated slurry having been prepared by a process comprising the steps of:

continuously introducing a repulped slurry of coated broke and a chemical flocculant into a shear imparting device, said slurry containing fibers and particles of coating residue and said chemical flocculant being added in an amount effective to form floccs of said fibers and said particles of coating residue; and

containing said floccs, the shearing force imparted by said device being sufficient to limit the size of said floccs to a size that is effective to enhance the retention of said floccs in a paper web; and

adding said treated slurry to a fibrous pulp slurry to form a combined slurry; and

withdrawing a paper web from said combined slurry.

63. (Previously presented) The paper web according to claim 14, wherein said low-grade pulp is present in said slurry in an amount of at least about 40%.

64. (Previously presented) The paper web according to claim 14, wherein said low-grade pulp is present in said slurry in an amount of at least about 50%.

65. (Previously presented) The paper web according to claim 14, wherein said pre-flocculated filler is selected from the group consisting of clays, lithopone, sulfate fillers, titanium pigments, talc, calcium carbonate, and gypsum.

66. (Previously presented) The paper web according to claim 65, wherein said pre-flocculated filler is flocculated with a flocculating agent selected from the group consisting of cationic starch derivatives and anionic starch derivatives.

67. (Previously presented) The paper web according to claim 66, wherein said pre-flocculated filler is flocculated with a cationic starch paste.

68. (Previously presented) The paper web according to claim 65, wherein said pre-flocculated filler is prepared by a process comprising the steps of:

continuously introducing an aqueous slurry of a non-flocculated paper filler material and an aqueous slurry of from 0.5 to 60% by weight of the filler material of a flocculating agent into a shear imparting device and imparting to the mixture within said device a shearing force sufficient to provide flocculated filler particles of a size adapted for use in paper making without any additional treatment and continuously removing said flocculated filler particles from the shear imparting device.

69. (Previously presented) The paper web according to claim 14, wherein said pulp includes groundwood pulp.

70. (Previously presented) The paper web according to claim 14, wherein said pre-flocculated filler is added to said slurry in an amount effective to provide a total filler content in said web of at least about 5% by weight.

71. (Previously presented) The paper web according to claim 14, wherein said pre-flocculated filler is added to said slurry in an amount effective to provide a total filler content in said web of at least about 7.5% by weight.

72. (Previously presented) The paper web according to claim 14, wherein all of the filler incorporated into said web is present as a result of said addition of said pre-flocculated filler to said slurry.

73. (Previously presented) The paper web according to claim 14, wherein the amount of flocculating agent in said filler ranges from about 0.5% to about 4% dry flocculant by dry weight of said filler.

74. (Previously presented) The paper web according to claim 32, wherein said low-grade pulp is present in said slurry in an amount of at least about 40%.

75. (Previously presented) The paper web according to claim 32, wherein said low-grade pulp is present in said slurry in an amount of at least about 50%.

76. (Previously presented) The paper web according to claim 32, wherein said pre-flocculated filler is selected from the group consisting of clays, lithopone, sulfate fillers, titanium pigments, talc, calcium carbonate, and gypsum.

77. (Previously presented) The paper web according to claim 76, wherein said pre-flocculated filler is flocculated with a flocculating agent selected from the group consisting of cationic starch derivatives and anionic starch derivatives.

78. (Previously presented) The paper web according to claim 77, wherein said pre-flocculated filler is prepared by a process comprising the steps of:

continuously introducing an aqueous slurry of a non-flocculated paper filler material and an aqueous slurry of from 0.5 to 60% by weight of the filler material of a flocculating agent into a shear imparting device and imparting to the mixture within said device a shearing force sufficient to provide flocculated filler particles of a size adapted for use in paper making without any additional treatment and continuously removing said flocculated filler particles from the shear imparting device.

80. (Previously presented) The paper web according to claim 32, wherein said pulp includes groundwood pulp.

81. (Previously presented) The paper web according to claim 32, wherein said pre-flocculated filler is added to said slurry in an amount effective to provide a total filler content in said web of at least about 7.5% by weight.

82. (Previously presented) The paper web according to claim 32, wherein said pre-flocculated filler is added to said slurry in an amount effective to provide a total filler content in said web of at least about 7.5% by weight.

83. (Previously presented) The paper web according to claim 32, wherein all of the filler incorporated into said web is present as a result of said addition of said pre-flocculated filler to said slurry.

84. (Previously presented) The paper web according to claim 32, wherein the amount of flocculating agent in said filler ranges from about 0.5% to about 4% dry flocculant by dry weight of said filler.

85. (Previously presented) The paper web according to claim 48, wherein said shearing force ranges from about 2800 to about 9200 s⁻¹.

86. (Previously presented) The paper web according to claim 48, wherein said flocculant is selected from the group consisting of water soluble vinyl polymers, gums, polyacryamide, polyDADMAC, aluminum sulfate, mannogalactans, and charged starch derivatives.

87. (Previously presented) The paper web according to claim 48, wherein said chemical flocculant is added in an amount ranging from about 0.5% to about 60% by weight of broke material in said slurry.
88. (Previously presented) The paper web according to claim 48, wherein said chemical flocculant is added in an amount ranging from about 5% to about 15% by weight of broke material in said slurry.
89. (Previously presented) The paper web according to claim 48, wherein said treated slurry is added in an amount ranging from 5% to 25% of said fibrous pulp slurry.
90. (Previously presented) The paper web according to claim 62, wherein said shearing force ranges from about 2800 to about 9200 s⁻¹.
91. (Previously presented) The paper web according to claim 62, wherein said flocculant is selected from the group consisting of water soluble vinyl polymers, gums, polyacryamide, polyDADMAC, aluminum sulfate, mannogalactanes, and charged starch derivative.
92. (Previously presented) The paper web according to claim 62, wherein said chemical flocculant is added in an amount ranging from about 0.5% to about 60% by weight of broke material in said slurry.
93. (Previously presented) The paper web according to claim 62, wherein said chemical flocculant is added in an amount ranging from about 5% to about 15% by weight of broke material in said slurry.
94. (Previously presented) The paper web according to claim 62, wherein said treated slurry is added in an amount ranging from 5% to 25% of said fibrous pulp slurry.